

IN THE CLAIMS

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1. Please amend Claim 1 as follows:

(Currently amended) Claim 1: An improved intercropping and mulching method without artificial herbicides, fertilizer, pesticides and manure, said improved intercropping and mulching method comprising:

10 (1) no-till planting an annual green manure crop in the soil of a predetermined area;

(2) mowing said annual green manure crop the following spring, said annual green manure crop being combined with organic residue from said predetermined area to form combined green manure, said organic residue comprising desiccated intact soybean roots and desiccated intact nitrogen nodules, said combined green manure comprising a first
15 portion of said combined green manure and a second portion of said combined green manure, said second portion of said combined green manure further blended with said soil of said predetermined area to a depth of approximately nine to fourteen inches, ~~said first portion of said combined green manure becoming a combination mulch,,~~ said annual
20 green manure crop remaining unmowed until tillage of said soil,

(3) intercropping at least two commercial crops within said soil blended with said second portion of said combined green manure, said first portion of said combined green manure

being collected, chopped and stored until intercropping is complete, said first portion of
said combined green manure becoming said combination mulch after said chopping,

(4) thereafter spraying said first portion of said combination mulch upon the surface of
5 said soil of said predetermined area, said predetermined area now containing seeds of
said at least two commercial crops,
whereby, said combined green manure provides nutrients to said at least two commercial
crops and said combination mulch provides a ground cover and nutrients for said at least
two commercial crops, said annual green manure crop and said organic residue
10 protecting said soil of said predetermined area during the winter.

(Previously presented) Claim 2. The improved intercropping and mulching method as
15 described in Claim 1, wherein one of said at least two commercial crops comprises a
legume.

(Previously presented) Claim 3. The improved intercropping and mulching method as
described in Claim 1, wherein one of said at least two commercial crops comprises
20 soybeans.

(Previously presented) Claim 4. The improved intercropping and mulching method of
Claim 1 wherein one of said at least two commercial crops comprises corn.

(Previously presented) Claim 5. The improved intercropping and mulching method of Claim 1 wherein one of said at least two commercial crops comprises corn and one of said at least two commercial crops comprises soybeans.

5 (Previously presented) Claim 6. The improved intercropping and mulching method as described in Claim 1, wherein there are no intercropped plants other than said at least two commercial crops, said at least two commercial crops comprising said corn and said soybeans.

10 (Previously presented) Claim 7. The improved intercropping and mulching method as described in Claim 6 wherein said corn and said soybeans are planted in alternating patterns comprising soybean areas and corn rows, each said soybean area and said corn row comprising a predetermined lateral width.

15 (Previously presented) Claim 8. The improved intercropping and mulching method as described in Claim 7, wherein said annual green manure crop comprises buckwheat.

Please amend amended independent Claim 9 as follows:

(Currently amended) An improved intercropping and mulching method comprising:

20 (1) planting an annual green manure crop in the soil of a predetermined area;

(2) mowing said annual green manure crop the following spring, said annual green manure crop being combined with organic residue to form combined green manure, said combined green manure comprising a first portion of said combined green manure and a

second portion of said combined green manure, said second portion of said combined green manure further blended with said soil of said predetermined area, said first portion of said combined green manure ~~becoming a combination mulch, being mechanically collected and mechanically chopped and thereby becoming a combination mulch,~~

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(3) intercropping at least two commercial crops within said soil blended with said second portion of said combined green manure, said combination mulch being stored during said intercropping,

10 (4) thereafter spraying said first portion of said combined combination mulch upon said soil of said predetermined area, said predetermined area now containing seeds of said at least two commercial crops,

whereby said combined green manure provides nutrients to said at least two commercial
15 crops and said combination mulch provides a ground cover and nutrients for said at least two commercial crops, said annual green manure crop and said organic residue protecting said soil of said predetermined area during the winter,

one of said at least two commercial crops comprising a legume,
20 one of said two commercial crops further comprising soybeans,
one of said at least two commercial crops comprising corn,
said at least two commercial crops comprising corn and soybeans,

there being no intercropped plants other than said at least two commercial crops comprising corn and soybeans, said corn and said soybeans planted in alternating patterns comprising corn rows and soybean areas respectively, each said soybean area and said corn row comprising a predetermined lateral width, said annual green manure crop selected from the group consisting of buckwheat or buckwheat and wheat, Austrian peas, hairy vetch, soybeans, annual rye grass and winter rye.

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(Previously presented) Claim 10. The improved intercropping and mulching method as described in Claim 9, wherein said annual green manure crops are mowed with a conventional mechanical forage harvester.

15 (Previously presented) Claim 11.

The improved intercropping and mulching method as described in Claim 10, wherein said combination green manure is sprayed upon said soil of said predetermined area after blending and chopping of said green manure plants and organic debris within a bale chopper.

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(Previously presented) Claim 12. The improved intercropping and mulching method as described in Claim 11 wherein said intercropped soybeans are planted simultaneously with said intercropped corn by using a fork lift attachment with two forks, front end loader and tractor, corn planter, and a modified seed drill, said modified seed drill and

said fork lift attaching to said tractor by said front end loader, said fork lift attachment elevated with a hydraulic lift and a retrofit adapter.

(Previously presented) Claim 13. The improved intercropping and mulching method as described in Claim 12 wherein said corn planter deposits said corn seeds between previously planted said soybean areas, said soybean areas consisting of soybean subrows, said soybean subrows deposited by said modified seed drill attached to said tractor, said corn seeds deposited within straight corn furrows.

Please amend amended Claim 14 as follows:

(Currently amended) Claim 14. An improved intercropping and mulching method for corn and soybeans comprising:

(A) planting a commercial legume crop in the soil of a predetermined area during the summer, said commercial legume crop forming organic debris within said soil after harvesting of said commercial legume crop,

(B) no-till planting buckwheat and wheat during the following fall in said soil of said predetermined area, said buckwheat and said wheat growing until the following spring, said buckwheat and said wheat covering said soil during the winter,

[[~~(B)~~]] (C) mowing said buckwheat and said wheat during said following spring, said mowing accomplished by forage harvester,

a second portion of said buckwheat and wheat forming an annual green manure for said soil of said predetermined area, said organic debris also comprising said second portion,

a first portion of said buckwheat and said wheat forming a combination mulch for said soil, said combination mulch further comprising said organic debris, said first portion being mechanically collected and chopped prior to becoming said combination mulch,
5 said combination mulch being stored in a forage box wagon,

(D) creating consecutive corn rows, each said corn row comprising three subrows of soybean seeds within a soybean area, each said corn row further comprising one corn furrow,

10 (E) seeding said soybean seeds in alternating said soybean areas within said consecutive corn rows by using a modified seed drill and a fork lift with a front end loader and a tractor, said tractor comprising a tractor center,
said modified seed drill comprising sets of three tru-vee openers along a horizontal opener draw bar, said fork lift rigidly attached to said modified seed drill by a first fork
15 and second fork, said forks attaching to said modified seed drill by enclosing one set of said tru-vee openers, said modified seed drill aligned with said tractor so said soybean seeds deposit directly beneath and anterior to [[the]] said tractor center,

(F) seeding said corn seed with a corn planter attached posterior to said tractor, said corn
20 planter creating said corn furrows within said soil corn, said corn furrows containing linearly deposited said corn seeds, said corn furrows spaced laterally from each other approximately 30 inches, said soybean subrows located approximately midway between two consecutive said corn furrows,

(G) covering said seeded soil with said combination mulch, said first portion of said green manure plants and organic debris placed within a forage box wagon prior to chopping within said bale chopper to form said combination mulch, said combination mulch sprayed onto said soil of said predetermined area with a hose attached to a bale chopper mounted to said forage box wagon.

(Previously presented) Claim 15. The method described in Claim 14 wherein said soybean seeds are planted at approximately eight to twenty seeds per square foot of said soil and said corn seeds are planted at approximately one corn seed per eight linear inches of said soil, said soybean seeds planted during the same pass across said preselected soil as said corn seeds.

(Previously presented) Claim 16. The method described in Claim 14 wherein said modified seed drill comprises eight said sets of said tru-vee openers and one center bar, a single said set of said tru-vee openers fitting between said first and second forks, said single set of tru-vee openers positioned immediately proximal to either side of said center bar, each said first and second fork resting upon said opener draw bar on either side of said single said set of said tru-vee openers, each said first and second fork attached to said opener draw bar by a clamp.

(Previously presented) Claim 17. The method described in Claim 14 wherein each said three soybean subrows comprising a soybean area is approximately 21 inches in lateral width.

5 (Previously presented) Claim 18. The method as described in Claim 14 wherein rotating augers pull said organic debris and said green manure plants from said forage wagon into said bale chopper, said bale chopper attaching to a discharge opening by sliding said bale chopper until interior surfaces of a bale tube fit snugly over exterior surfaces of panels of said storage box wagon.

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(Previously presented) Claim 19. The method as described in Claim 14 wherein said true-vee openers are arranged in said sets of three, thereby leaving lateral space between each said set along said horizontal bar, each said set seeding soybeans within said three said soybean subrows when said modified seed drill is pulled by said tractor, each said lateral
15 space seeded with said corn seed within said corn furrows while said corn planter is pulled by said tractor, said seeding of said corn seed and said soybean seed occurring with said modified seed drill and said corn planter operatively attached to a single tractor.

20 (Previously presented) Claim 20. The method as described in Claim 19 wherein said two sides of a bale tube attach to said bale chopper, said two sides of said bale tube snugly fitting over an anterior and posterior panel, said anterior and posterior panels surrounding augers of said forage box wagon, said sides of said bale tube mechanically attached to said anterior and posterior panels, said forage box wagon physically attaching
25 to said bale chopper main frame with L-brackets, said green manure plants and organic

BRIEF**I. The specification as originally filed is enabling according to 35 U.S.C. 112, first paragraph.**

In support of its conclusion that the specification and claims are not enabling, the

10 government states in relevant part:

“the harvesting of the first portion of the annual green crop and its mixing to become a combined green manure is critical or essential to the practice of the invention, but not(sic) included in the claim(s) (sic)is not enabled by the disclosure.”

February 10, 2006 Office Action, Page 2, third paragraph.

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However, Applicant observes that there are numerous passages within the specification which explicitly enable the amended claims. *See* Application, paragraph 66 (combination mulch 20 is collected in a forage box wagon); Application, paragraph 78 (top approximate one-half of the upper portion of young wheat and/or buckwheat plants 18a is

20 chopped and blended with organic debris 19).

In particular, paragraph 81 describes:

(i) how mowed green manure plants and organic debris 19 are gathered by a particular machine, and

(ii) how this machine simultaneously mows, collects and blows upper portions of young wheat and/or buckwheat plants 18a, along with organic debris 19,

5 (iii) into a forage wagon for storage prior to mixing and chopping within a bale chopper.

Paragraphs 133 through 145 describe in further detail exactly how corn stalks, organic debris and mowed green manure plants are blown into a forage wagon and chopped therein by machines. These paragraphs also describe how the green manure plants, cornstalks and organic debris are initially mixed by this blowing as they enter the forage
10 wagon. Paragraphs 146 through 148 specify how combination mulch is sprayed on the soil with machinery and an attached hose. See also Figures 19 and 20.

Based upon the above paragraphs which contain the information which the government requires, Applicant concludes that his specification as originally filed enables his
15 amended claims.

II. Procedural concerns

20 When rejecting claims under section 112, first paragraph, the government must explain why nothing within the scope of the claims is enabled. MPEP 706.03(c). In the pending case the government has not done so, nor has it suggested claims which are enabled by the disclosure. Moreover, Applicant overcame all the original rejections, yet was
25 subsequently presented with an entire new legal basis for rejection of the entire

application. MPEP 707.07(g)(for a major technical rejection, there should be a full development of the reasons for a major technical rejection.))

A second office action should be final unless the government introduces a new ground of rejection which is not required by an applicant's amendment of the claims. MPEP 706.07(a). In the pending case applicant overcome the rejections of the first office action, see February 10, 2006 Final Office Action, page 3, line 1. However, the rejection of the entire application based upon section 112 was an entirely new ground of rejection which was not required by Applicant's amendment of the claims.

As a result, the government's final office action was premature. MPEP 706.07(c) (any question as to a premature final rejection should be raised while the application is pending before the primary examiner.) Applicant respectfully requests that the finality of this office action be withdrawn. MPE P 714.12; 37 C.F.R. 1.116(b).

III. Under section 112, first paragraph, Applicant's invention does not require undue experimentation to use or create.

Applicant's originally filed specification explicitly describes the steps which were the basis for the final rejection. However, even if Applicant's application had not explicitly included these steps, their description is unnecessary if the written description otherwise permits those skilled in the art to make and use the invention. MPEP 2164 second paragraph *citing* CFMT, Inc. v. Yieldup Int'l Corp. 349 F.3d 1333, 1338, 68 U.S.P.Q.2d 1940, 1944 (Fed. Cir. 2003) (an invention directed to a general system to improve the

cleaning process for semiconductor wafers was enabled by a disclosure of improvements in the overall system).

The proper test for enablement is: Whether undue experimentation is required to practice
5 the invention. MPEP 2164.01 *citing* Mineral Separation v. Hyde, 242 U.S. 261, 270
(1916), *followed by* In re Wands, 858 F.2d 731, 737, 8 U.S.P.Q.2d 1400, 1404 (Fed. Cir.
1988). A patent need not teach, and preferably omits, what is well known in the art.
MPEP 2164.01, *citing* In re Buchner, 929 F.2d 660, 661, 18 U.S.P.Q.2d 1331, 1332 (Fed.
Cir.1991). The test is not whether experimentation is necessary but whether, if
10 necessary, the experimentation is undue. MPEP 2164.01 *citing* In re Angstadt, 537 F.2d
498, 504, 190 U.S.P.Q. 214, 219 (C.C.P.A. 1976).

Undue experimentation factors which courts consider include:

- 15 (1) Breadth of the claims;
- (2) Nature of the invention;
- (3) State of the prior art;
- (4) Level of one of ordinary skill;
- (5) Level of predictability in the art;
- 20 (6) Amount of direction provided by the inventor;
- (7) Existence of working examples; and
- (8) Quantity of experimentation needed to make or use the invention based
upon the content of the disclosure.

MPEP 2164.01(a) *citing* In re Wands, 858 F.2d at 737.

Furthermore, if a statement of utility in the specification contains a connotation of how to use, and/or the art recognizes that standard modes of use, then this specification is sufficiently enabling. MPEP 2164.01(c), *citing In re Brana*, 51 F.3d 1560, 1566, 34 U.S.P.Q.2d 1437, 1441 (Fed. Cir. 1993). The amount of guidance for enablement of an invention is inversely related to the knowledge and predictability of that art. MPEP 2164.03 *citing In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 24 (C.C.P.A. 1970).

In the pending case the government has not addressed any of the above considerations and factors, and consequently it should withdraw its rejection of Applicant's application and claims.

IV. Prior art references

The government cites the following as prior art upon which it did not rely: Tonhasca, Jr. et al, "Effects of Strip Intercropping and No-Tillage on Some Pests and Beneficial Invertebrates of Corn in Ohio," *Environmental Entomology*, Vol. 20: 5, 1251-1258 (1991). According to this study adult crop and root damage by western corn rootworm increased with respect to conventional tillage and intercropping. There was o application of chemical pesticides which teach away from Applicant's invention. In addition, there is no procedure for mixing, chopping, and spraying combination mulch upon previously intercropped seeded soil which already contains green manure plants.

The government also cited the following reference without relying upon it for an enablement rejection: P.R. Warman, " Effect of Incorporated green manure crops on

subsequent and production in an acid infertile silt loam,” *Developments in Plant Soil Science*, 45:431-435 ((1991). For this study the scientists grew green manure crops on fields in which they subsequently planted oats.

- 5 This study concluded that (i) buckwheat green manure significantly reduced oat production compared to clover green manure; and (ii) the highest concentration of artificial chemical fertilizer rates improved oat yields. Applicant’s invention contains no artificial chemical fertilizer, and this study does not disclose mulch of wheat grass and cornstalks, which is applied on two separate occasions during the growing season.

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